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ABSTRACT

This self-instructional model, written for registered nurses, is divided into three sections: (1) anatomy and physiology of the patient before and after laryngectomy; (2) eating and nourishment following the total laryngectomy; and (3) two options for speech following a total laryngectomy--the electrolarynx and esophageal speech. The manual provides the learner with basic information in the care of the patient who undergoes a total laryngectomy to help the caregiver with these patients. Directions, prerequisites, terminal objective (goal), performance objectives, pre- and post-assessment (answers included), and summary are the components of the module. Three appendices contain pre- and post-operative laryngectomy diagrams, placement of electrolarynx, and diagram of esophageal speech. (NLA)

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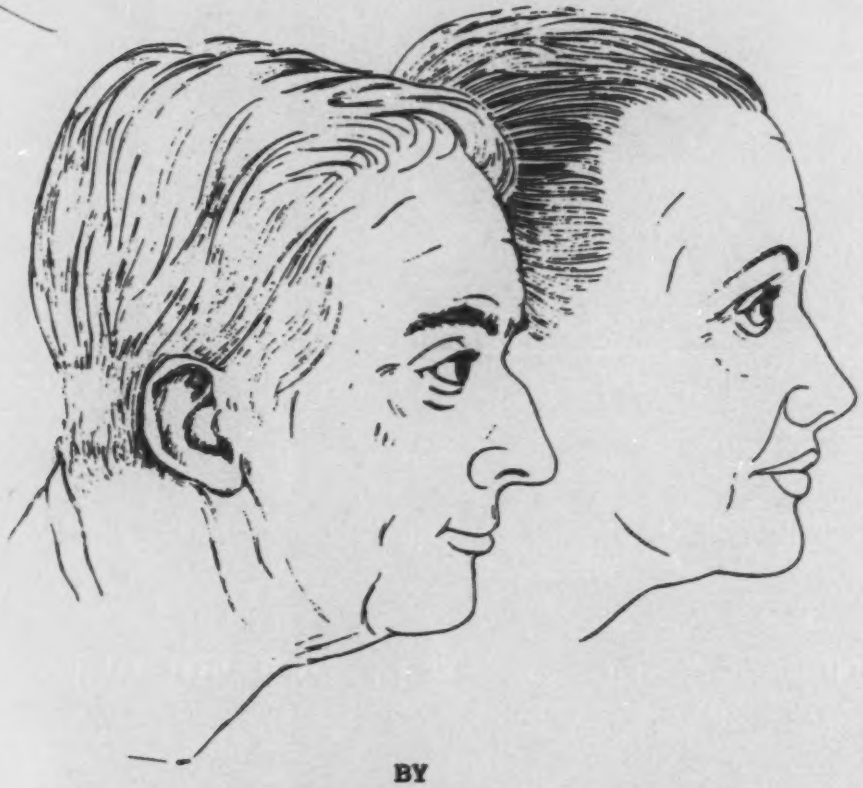
CARE OF

THE LARYNGECTOMEE

AN INSTRUCTIONAL MODULE



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ABSTRACT

CARE OF THE LARYNGECTOMY: AN INSTRUCTIONAL MODULE, is written with Registered Nurses in mind. This module is designed to be self-contained and self-instructional for use in obtaining C. E. credits toward R. N. re-licensure.

The intention of this particular module is not to cover all aspects of the care of the total laryngectomee, for to do so would produce a module with too much information to be effective.

This module, however, is designed to cover three areas of interest, and therefore is divided into three sections. Section I discusses the anatomy and physiology of the patient pre and post operative laryngectomy. Section II discusses eating and nourishment following a total laryngectomy. Finally, Section III discusses two options for speech following a total laryngectomy; the electrolarynx and esophageal speech.

The hope of this module is to provide the learner with basic information in the care of the patient who undergoes a total laryngectomy so as to help the care giver provide the best possible care for this challenging group of patients.

TABLE OF CONTENTS

	Pages
Introduction	1
Directions	3
Pre-Requisites	4
Terminal Objective	5
Performance Objectives	6
Pre Assessment	7
Answers to Pre Assessment	10
Section I	12
Section II	22
Section III	27
Post Assessment	32
Answers to Post Assessment	37
Summary	40
Bibliography	41
Appendices	42

Please Turn To The Next Page.

INTRODUCTION

Cancer, in general, if detected early is highly curable. Cancer of the larynx is no exception. It accounts for about 3-5% of all cancers. When this diagnosis is made it can be very devastating. In the case of cancer of the larynx the devastation is often exacerbated because of the significant change in body image that occurs following surgery.

As part of this introduction it is important to understand a few glaring facts about patients who are about to undergo a total laryngectomy. Most of the patients are alcoholics 90+% and most of them have a long history of smoking. As a result, many of these patients present with large tumors that require a total laryngectomy. The alcohol often puts them in a less than desirable nutritional state, preoperatively, requiring the patient to undergo special nutritional assessment and treatment. This, in turn, adds to the challenge of adequately nourishing these patients post operatively. All of this will be discussed in Section II of this module.

Please Turn To The Next Page.

Your goal for selecting this module for C. E. credits hopefully is twofold. First, to successfully obtain your credits, and secondly to expand your knowledge of the total laryngectomy patient in hopes of providing better care through understanding.

Successful completion of this module will provide you with basic terminology in addition to knowledge and understanding of the anatomical and physiological changes pertinent to the total laryngectomy patient. Most importantly, it will provide you with information about what these changes will mean to the patient and your practice of nursing.

Please Turn To The Next Page.

DIRECTIONS

WELCOME!!!

1. This is a self-contained, self-instructional module that is divided into 3 sections.
2. As you read through each section you will be given the opportunity to assess your acquired knowledge with various practice exercises.
3. Prior to beginning this module you will need to complete a short pre-assessment as a way to determine your prior knowledge of this material.
4. The target population, for this module, are Registered Nurses seeking C. E. credits toward licensure requirements.
5. This module should take you approximately 45-60 minutes to complete.
6. At the end of the module you will be asked to discuss your feelings about the relevancy of this material to your practice of Nursing.
7. This module is yours to keep. Please write your answers in the blank spaces provided. If needed, additional answer sheets are provided in the back of the module
8. A post-assessment will be administered upon completion of the module. This will help assess and reinforce what you have learned.

Please Turn To The Next Page.

PREREQUISITES

It is essential that you have certain background information before you can expect to be successful at completing this module. Be sure you are able to complete the following before beginning this module.

1. You must hold an R. N. license.
2. You must have familiarity with the location of these anatomical structures: Pharynx, Larynx, Esophagus, Trachea, Epiglottis, Nasopharynx, and Oral Cavity.

Sources for satisfying #2 of prerequisites.

1. Any Nursing, Medical, or Anatomy and Physiology textbook that includes content on Head and Neck Anatomy.

Please Turn To The Next Page.

TERMINAL OBJECTIVE (GOAL)

Upon completion of this module, the Registered Nurse will be able to identify the pre and post operative anatomy, changes, if any, in the eating ability, and 2 common options for speech for the total laryngectomy patient.

Additionally, the Registered Nurse will be able to express feelings toward the relevance of the material in his/her practice of Nursing.

Please Turn To The Next Page.

PERFORMANCE OBJECTIVES

1. Upon completion of this module, the Nurse will be able to define correctly basic head and neck anatomical and physiological terms specific to total laryngectomy patients.
2. Given a pre-laryngectomy anatomical diagram, the Nurse will be able to correctly identify the anatomical structures specific to a total laryngectomy patient.
3. Given a post laryngectomy anatomical diagram, the Nurse will be able to identify correctly the missing anatomical structures.
4. Upon completion of this module, the Nurse will be able to describe accurately, what changes occur with the function of eating following a total laryngectomy.
5. Upon completion of this module, the Nurse will be able to describe accurately, what happens to the function of speech following a total laryngectomy.
6. Upon completion of this module, the Nurse will be able to identify and describe correctly 2 types of speech available to the total laryngectomee.
7. Upon completion of this module, the Nurse will be able to adequately discuss feelings about the relevance of the material to the care of the laryngectomee.

Please Turn To The Next Page.

PRE-ASSESSMENT

A pre-assessment measures your familiarity with this material prior to beginning this instructional module. Do not worry if you do not know an answer, as they will become apparent to you as you proceed through this module.

In the following statements below, fill in the correct anatomical/physiological term for each description.(Objective 1)

1. The three sections of the pharynx are called:_____, _____, and _____.
2. A flaplike structure that helps prevent aspiration during swallowing is called the_____.
3. The_____has as its lower border the larynx and as its upper border the nasopharynx.
4. Besides the vocal cords, the larynx is also comprised of the _____ and the _____.
5. The _____and _____become functionally separated during a total laryngectomy.
6. Through the _____ passes food enroute to the stomach.
7. The_____is an extension of the pharynx into which open the posterior nostrils and eustachian tubes from the middle ear.

Please Turn To The Next Page.

8. The patient has undergone a_____when the voice box and surrounding structures have been removed. The correct terminology to describe this person is_____.

9. From the list of anatomical structures below, place an **X** in front of the structures that are **removed** during a total laryngectomy. (Objectives 2 & 3)

___Larynx	___Trachea
___Pharynx	___Nasopharynx
___Epiglottis	___Oral Cavity

The following questions can be answered in 1-2 sentences. Please write your answers in the space provided. If necessary, use the back of this paper.

10. **Describe** what happens to the patients' ability to eat, immediately following a total laryngectomy.(Objective 4)

11. **Describe** whether a patient, post total laryngectomy, will ever be able to eat normally again. (Objective 4)

12. **Describe** what happens to the function of speech following a total laryngectomy. (Objective 5)

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13. Describe, briefly, how the electrolarynx and how esophageal speech work. (Objective 6)

Answers to the Pre-Assessment next page.

Please Turn To The Next Page.

ANSWERS TO PRE-ASSESSMENT

1. The three sections of the pharynx are called the **oropharynx**, **nasopharynx**, and the **laryngopharynx**.
2. A flaplike structure that helps prevent aspiration during swallowing is called the **epiglottis.**
3. The **pharynx** has as its lower limits the larynx and as its upper limits the nasopharynx.
4. Besides the vocal cords, the larynx is also comprised of the **vestibule** and the **false cords**.
5. The **trachea** and **esophagus** become functionally separated during a total laryngectomy.
6. Through the **esophagus** passes food enroute to the stomach.
7. The **nasopharynx** is an extension of the pharynx into which open the posterior nostrils and eustachian tubes from the middle ear.
8. The patient has undergone a **laryngectomy** when the voice box and surrounding structures have been removed. The correct terminology to describe this person is **laryngectomee.**
9. The structures that are **removed** during a total laryngectomy are the **larynx** and the **epiglottis.**

Please Turn To The Next Page.

ANSWERS TO PRE-ASSESSMENT (CON'T)

10. Immediately following surgery, the patient will be unable to eat normally because of the surgical wound needing to heal. Temporarily the patient is fed through a nasogastric tube.

11. The patient should be able to eat normally once the surgical wound has healed. If the patient goes on to receive radiation therapy eating normally will be delayed. If everything progresses smoothly the patient should be eating normally by the end of 4 months postoperatively.

12. The function of speech no longer exists following a total laryngectomy. The patient will need to learn alternate means of communicating.

13. The **electrolarynx** works by holding it flush against the side of the neck and sound is resonated from it when the patient articulates.

    Esophageal speech works when the patient is taught how to trap and hold air by taking it down to the level of the esophagus. The patient is then taught to tighten the abdominal muscles and at the same time relax the esophagus. By doing this, they are then able to produce a belch-like voice.

Please Turn To The Next Page.

SECTION I

ANATOMY AND PHYSIOLOGY

This beginning section will set the tone for the remaining sections of this module. This section will be your foundation onto which Sections II and III will build.

The anatomy and physiology of the head and neck is an area that all of you as RN's have learned about in your schooling but it is an area that often gets forgotten particurly if you do not care for patients with head and neck cancer. These patients do not account for a large portion of cancers, in general, so you will care for them on a very infrequent basis.

This section will not be dealing with all head and neck anatomy and physiology, just what will pertain to patients who are about to undergo a total laryngectomy.

The anatomy and physiology of the head and neck patient is the same as any other patient, that is until the total laryngectomy is performed. However, it is very important, as nurses, that we are able to explain to a pre total laryngectomy patient what changes are going to occur following surgery. In order to do so, you first must be able to teach the patient about the normal anatomy. There are sites in the head and neck region that are important for the nurse to know and understand, and hopefully this section will provide the necessary information.

Please Turn To The Next Page.

In the discussion of the various sites of the head and neck region you will see that the information will be presented in a pre and post operative format. This will facilitate seeing what changes will be occurring following a total laryngectomy. You are invited to use as a reference, diagram 1, (Appendix A P.42).

LARYNX:

Preoperatively:

The larynx is most well known because it houses a very important part of the anatomy, the vocal cords. When a patient is diagnosed with cancer of the larynx that generally means that one or both vocal cords are involved requiring a surgical procedure. It is composed of the vocal cords, vestibule (space above the cords), and the false cords. Since this module is only concerned with patients who are about to undergo a total laryngectomy, it is safe to assume that enough of the vocal cords and surrounding tissues were involved with cancer to require such a surgical procedure.

Prior to surgery, the patient will speak with the surgeon and speech pathologist, but the reality of never being able to speak normally again, generally takes awhile for the patient to totally grasp. It becomes important that the nurse be supportive pre and post operatively and one of the best ways is to be knowledgeable in the surgical procedure so that questions from the patient and family can be answered.

Please Turn To The Next Page.

Postoperatively:

When a total laryngectomy is performed the surgeon removes the larynx. The trachea and esophagus become functionally separated. The patient's trachea is brought out through the neck and a permanent opening (stoma) is made.

Physiologically the larynx, because it has been removed, obviously ceases to function as the structure from where phonation was produced. The patient, now referred to as a laryngectomee, (one who has had a laryngectomy) will need to learn alternate ways to communicate. (to be discussed in Section III).

TRACHEA:

Preoperatively:

The trachea is the structure that is commonly known as the windpipe. It is the part of the anatomy that extends from the larynx on into the lungs via the bronchi. The trachea is well protected from the outside elements.

Postoperatively:

Following a total laryngectomy the trachea must be brought out through the neck and a permanent opening (stoma) is created. It is through this stoma that the patient will breathe. The patient will never breathe again through the nose and/or mouth.

Physiologically the trachea must adapt to being directly exposed to air. The trachea must and will adapt to being exposed and this will occur slowly by providing a lot of

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humidification postoperatively with gradual weaning as the trachea and stoma adapt.

ESOPHAGUS:

Preoperatively:

The esophagus is located behind the trachea, and is the anatomical structure that carries food and liquids from our mouth on into our stomach. It follows in continuity with the laryngopharynx. The esophagus remains intact except for the region where the trachea is dissected off.

Postoperatively:

The function of the esophagus does not significantly change following a total laryngectomy. Because of the surgical trauma to the esophagus that surgical site will need to heal sufficiently before the patient will be allowed to eat normally.

EPIGLOTTIS and ARYEPIGLOTTIC FOLDS:

Preoperatively:

The epiglottis is a flaplike structure that closes over the trachea to prevent choking or aspiration during swallowing. This structure is attached to the arythenoid cartilage by the aryepiglottic folds. The constriction of these folds is what moves the epiglottis. This structure often is overlooked, that is until we "swallow the wrong way". Then we become quickly reminded that our epiglottis did not close properly as we erupt into a spasm like cough as the food/ liquid comes in contact with the very sensitive trachea.

Please Turn To The Next Page.

It becomes clear how important it is to protect the trachea after a total laryngectomy and allow it time to adapt to its environment.

Postoperatively:

The epiglottis and the aryepiglottic folds are removed during a total laryngectomy because they no longer serve any purpose. Remember, the trachea and esophagus have been functionally separated during the surgery so there is no need for the epiglottis in the prevention of aspiration.

PHARYNX:

The pharynx is a muscular tube like structure that is lined with mucous membranes. It has as its upper border the nasopharynx and as its lower border the larynopharynx. The pharynx is also divided into 3 parts; **nasopharynx, oropharynx,** and the **laryngopharynx.**

The nasopharynx and the oropharynx, are rarely involved, in a patient with cancer of the larynx. However, the laryngopharynx, where the epiglottis is located, is often involved.

Preoperatively:

The **nasopharynx** is the most superior region of the pharynx, into which the posterior nostrils and the eustachian tubes open. It is found within the bony structures of the nasal cavity.

The **oropharynx**, is found within the bony structures of the oral cavity. Nothing surgically happens to the

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oropharynx during a total laryngectomy. The oropharynx houses, among other structures, the teeth, tongue, and taste buds.

The **laryngopharynx** or **hypopharynx** is a very important part of the anatomy in a total laryngectomy patient. When "surrounding tissues" are discussed it is the parts of the laryngopharynx that encompass these tissues.

Preoperatively this region has as its anterior border the larynx, as its posterior border the posterior pharyngeal wall, and laterally the pyriform sinuses.

Postoperatively:

There is no surgical procedure that is done to either the **nasopharynx**, and/or the **oropharynx**. However, because the patient can no longer breathe through the mouth and nose, the function of the nasopharynx ceases. The patient may suffer difficulty with dryness and one thing that is often forgotten is the patient can no longer smell and this will become an issue for discussion in section II. Eventually the nasopharynx will adapt to the lack of moisture as does the trachea. Post operative humidification in the patients environment is necessary. In reference to the **oropharynx**, since the patient cannot smell, (breathing through the tracheal stoma), the patient generally will have difficulty with tasting. Dryness will also be of concern to the patient and both issues will be addressed in Section II.

Please Turn To The Next Page.

Postoperatively (con't)

In a total laryngectomy we know that the larynx is removed. Also along with the larynx it is also possible that some of the structures that make up the **laryngopharynx** are also removed. It is possible for one or both of the pyriform sinuses to be removed if the tumor extends beyond the lateral border of the larynx. If the pyriform sinuses are involved, and subsequently removed, this can increase the patient's risk of having some difficulty with eating following surgery. This occurs because this region, which is already narrow, becomes even more so with post surgical scarring. If this becomes a problem for the patient it usually occurs several months after surgery and it could necessitate dilitation of the esophagus in this area.

Please Turn To The Next Page.

Much content has been presented in Section I. Some may have been new and some may have been a review. It is important, now, to check your knowledge of the anatomy and physiology section.

Please look at Practice Exercises 1 and 2.

PRACTICE EXERCISE 1

Please answer True or False for the statements below. If the statement is False, please correct it. If necessary, use the reverse of this page for your answers.

___1. The pharynx is comprised of the nasopharynx, oropharynx, and laryngopharynx.

___2. The epiglottis remains intact following a total laryngectomy.

___3. The pyriform sinuses are part of the nasopharynx.

___4. The laryngectomee loses only the ability to smell following a total laryngectomy.

PRACTICE EXERCISE 2

Please fill-in-the-blanks to the following sentences.

1. A person who has undergone the removal of the larynx is called a_____.
2. Postoperatively the_____and_____are functionally separated.
3. The_____is removed because it no longer is needed to prevent aspiration during swallowing.

Practice Exercise 2 continued
on next page.

Please Turn To The Next Page.

Practice Exercise 2 (con't)

4. The patient can no longer_____or_____through the nasopharynx, post total laryngectomy.

5. The_____is brought out through the neck and a permanent opening or_____is made.

Check Your Answers To
Exercises 1 and 2 On The
Next Page.

Please Turn To The Next Page.

Answers to Practice Exercises 1 and 2.

Exercise 1.

True The pharynx is comprised of the nasopharynx, oropharynx, and the laryngopharynx.

False The epiglottis is removed during a total laryngectomy.

False The pyriform sinuses are part of the laryngopharynx.

False The laryngectomee loses the ability to smell but also the ability to taste normally, following surgery.

Exercise 2.

1. A person who has undergone the removal of their larynx is called a laryngectomee.
2. Post total laryngectomy the trachea and esophagus are functionally separated.
3. The epiglottis, is removed because it no longer is needed to prevent aspiration during swallowing.
4. The patient, post total laryngectomy, can no longer breathe or smell through the nasopharynx.
5. The trachea is brought out through the neck and a permanent opening or stoma is made.

If you were unable to answer 8 out of 10 questions correctly, don't worry, it may be necessary for you to go back and review in Section I, the anatomy and physiology of the structures that you had difficulty with, then try again. If on your second try, you do not obtain 100% mastery, please see the instructor for further clarification of the material.

Please Turn To The Next Page.

SECTION II

EATING AND NOURISHMENT POST TOTAL LARYNGECTOMY

Now that you have successfully completed the anatomy and physiology section you are now ready to move onto Section II.

This section will speak solely to the eating and nourishment issue prior to and following a total laryngectomy.

It must be prefaced here that since most of these patients will go on to receive radiation therapy at around 2-4 weeks after their total laryngectomy, many of their eating problems become exacerbated during radiation therapy. Even though radiation therapy is not going to be discussed in this module, it is important to keep in mind that the recovery period becomes extended as a result of the radiation.

Prior to surgery many of these patients are experiencing difficulty in swallowing which makes eating, quite often, intolerable. Many of these patients, because of problems with alcohol, have neglected their health and consequently enter the health care system in some state of malnutrition.

It is quite often the case that these patients need to be nutritionally evaluated and treated preoperatively so that they can do well with the surgery. Often this treatment requires the insertion of a nasogastric tube and tube feedings begun. Other times it is necessary to begin total parental nutrition to adequately balance the patients electrolytes in preparation for surgery.

Please Turn To The Next Page.

Once the total laryngectomy has been performed, and the trachea and esophagus become separated, the process of eating actually becomes easier for the patient. Immediately post operatively the patient will receive nutrition intravenously. At around the 3rd. or 4th. post op day the patient will begin tube feedings. If the patient does well with the tube feedings, sometimes they will be allowed to take some food and liquids by mouth at around the 7th. to the 10th. day post op. Often the patient is discharged before beginning to eat by mouth. Therefore this process is often monitored by a home health nurse. If the patient does well with eating by mouth the nasogastric tube can be removed. However, it is important to note that if the patient goes on to have radiation therapy, following the total laryngectomy, many physicians prefer to leave the nasogastric tube intact until the patient has completed the course of radiation therapy. This is one way of guaranteeing that the patient will receive adequate nutrition during radiation therapy. If this is the case then the patient will be allowed to begin eating by mouth once properly healed from the radiation therapy. The patient will begin slowly with liquids and soft foods and progress as they are able to tolerate different types of food and liquids.

In section I it was discussed that the patient loses the sense of smell and taste. This loss is also exacerbated by the radiation therapy. When the patient begins to eat by mouth again, their loss of smell and taste need to be considered. It is very easy for the patient not to want to eat

Please Turn To The Next Page.

because nothing is appealing. This is where the patient needs to be taught how to be creative. There are many spices that can be used to enhance the flavor of the food. It is also important to acquire the assistance of a dietician to help the patient through this phase. Amazingly, the patient will regain some of his/her sense of taste, especially the bitter and the sweet, but his/her sense of smell will not return. If the patient can be taught to capitalize on whatever taste s/he regains, s/he will be able to enjoy eating again.

Please Turn To The Next Page.

Before you move on to Section III, let's complete a Practice Exercise to reinforce the information presented in Section II.

Practice Exercise 3.

Please fill-in-the-blanks to the following sentences.

1. Prior to surgery, most patients about to undergo a total laryngectomy are in some state of_____.
2. Many of the patients about to undergo a total laryngectomy are in a poor nutritional state due to_____.
3. _____ _____ may delay the patient in resuming normal eating habits.
4. The patient, 2-4 days following a total laryngectomy, receive nutrition via an_____.
5. Once the patient has healed after surgery and/or radiation, you can expect the patient to resume_____eating again.

Check Your Answers To
Practice Exercise 3 On
The Next Page.

Please Turn To The Next Page.

SECTION III

SPEECH FOLLOWING A TOTAL LARYNGECTOMY.

Congratulations, you have successfully completed Sections I and II of this module and you are about to begin the final section.

Section III is going to discuss two possible options for speech following a total laryngectomy. The electrolarynx and esophageal speech. There is a third option, tracheal esophageal puncture, but because it requires an additional surgical procedure, its use is less common. It has not been included in this module.

What is an electrolarynx? (See diagram, Appendix B. p. 43). It is a wonderful option for vocal rehabilitation following a total laryngectomy. The electrolarynx is an artificial sound source that can be placed flush on the cheek or side of the neck, of if the patient has excessive neck edema the electrolarynx can be fitted with a tube and it can then be introduced into the oral cavity. When the patient is taught to speak with the electrolarynx, it must be stressed that the patient keep constant eye contact with the person they are speaking to. In addition, the patient is taught how to articulate their words in an exaggerated fashion. Remember, a speech pathologist will work with the patient pre and post operatively but the more you, as a nurse, understand about the process, the quicker the patient will be able to master the electrolarynx as a means of communicating.

Please Turn To The Next Page.

Answers To Practice Exercise 3.

1. Prior to surgery, most patients about to undergo a total laryngectomy are in some state of **malnutrition.**
2. Many of the patients about to undergo a total laryngectomy are in a poor nutritional state due to **alcoholism.** (Remember that 90+% are alcoholics before getting cancer)
3. **Radiation Therapy** may delay the patient in resuming normal eating habits.
4. The patient, 2-4 days following a total laryngectomy receive nutrition via a **nasogastric tube.**
5. Once the patient has healed after surgery and/or radiation therapy, you can generally expect the patient to resume **normal** eating again.

If you were unable to answer 4 out of 5 questions correctly, don't worry, it may be necessary for you to go back and review Section II, then try again. If on your second try you do not obtain 100% mastery, please see the instructor for further clarification of the material.

Please Turn To The Next Page.

Most patients cannot begin to use an electrolarynx until around 5-7 days following surgery. Prior to this they must be provided with paper and pencil or the like (i. e. magic slate), to communicate. This time is often very frustrating for the patient, having to write everything down. As nurses, you can help eliminate some of this frustration by allowing extra time, so the patient will feel less rushed.

The next option to be discussed is esophageal speech. (see diagram Appendix C P.44). Because this cannot begin until the patient has adequately healed from the surgery and/ or radiation therapy, around 3-4 months postoperatively, most patients use an electrolarynx during the interim.

Learning esophageal speech takes a lot of time and practice with a speech pathologist. The patient must be taught to trap and hold air by taking it down to the level of the esophagus. The patient is then taught to tighten the abdominal muscles and, at the same time, relax the esophagus. By doing this s/he is able to produce a belch-like voice. This new voice becomes the sound source (what the voice box used to be) for speech. When the patient can control this voice, s/he then learns to articulate 4-5 words at a time.

Please Turn To The Next Page.

When the patient becomes well accomplished with esophageal speech, the intake of air is not noticed by an observer. As mentioned earlier, this way of speaking takes time and practice and often is not for everyone. The patient must be extremely motivated to stick with it because it could take anywhere from 6 months to 1 year to become proficient. Many laryngectomee's decide that the electrolarynx is sufficient. Regardless of what method the patient chooses, s/he should be offered only encouragement so that s/he can re-enter life with a sense of pride and accomplishment.

Please Turn To The Next Page.

Hang In There!!! You have only one more practice exercise to reinforce Section III, a quick post assessment and you will be finished.

To conclude Section III, please fill-in-the-blanks for questions 1-3 in Practice Exercise 4.

Practice Exercise 4.

1. Name the two options for speech following a total laryngectomy.

   a.

   b.

2. _____is a mechanical sound source for total laryngectomy patients.

3. A laryngectomee is using_____when he/she speaks in a belch-like voice.

Please give a short answer to questions 4 & 5.

4. When can a laryngectomee begin using an electrolarynx following surgery?

5. Why must laryngectomees wait until 3 months following surgery to begin esophageal speech?

Check Your Answers To Exercise 4 On The Next Page.

Please Turn To The Next Page.

Answers to Practice Exercise 4.

1. The names of the two options for speech following a total laryngectomy are:
    a. electrolarynx
    b. esophageal speech
2. An **electrolarynx** is a mechanical sound source for total laryngectomy patients.
3. A laryngectomee is using **esophageal speech** when he/she speaks in a belch-like voice.
4. A laryngectomee can begin using an electrolarynx around **5-7 days post surgery.**
5. Laryngectomee's must wait until 3 months post surgery to begin learning esophageal speech because they must have the swelling from the surgery and/or radiation gone before they can effectively be taught esophageal speech.

If you were unable to answer 4 out of 5 questions, in Practice Exercise 4, don't worry, go back and review Section III, then try again. If on your second try you do not obtain 100% mastery, please see the instructor for further clarification of the material.

Please Turn To The Next Page.

POST ASSESSMENT

100% mastery is required. If you miss a question, or any part of a question, please review that section of the module until you are able to achieve 100% mastery. It is a good idea for you to complete the pre assessment to further validate your learning.

For each description presented, please circle the letter that represents the best answer. Select only one. (Objective 1).

1. The pharynx is divided into three sections. What are the names of these sections?

    A. oropharynx, nasophayrnx, arthopharynx

    B. nasophayrnx, hypopharynx, layrngopharynx

    C. laryngopharynx, oropharynx, nasopharynx

2. A flaplike structure that helps prevent aspiration during swallowing is called.

    A. laryngopharynx

    B. epiglottis

    C. esophagus

3. Besides the vocal cords, the larynx is also comprised of:

    A. false cords, vestibule

    B. pharynx, epiglottis

    C. trachea, esophagus

Please Turn To The Next Page.

4. The two structures that are functionally separated following a total laryngectomy are called.

   A. trachea and esophagus

   B. esophagus and epiglottis

   C. Stoma and trachea

5. The muscular structure, in the head and neck region, that is divided into 3 areas is called.

   A. pharynx

   B. laryngopharnx

   C. oropharynx

6. The two senses that are lost following a total laryngectomy are.

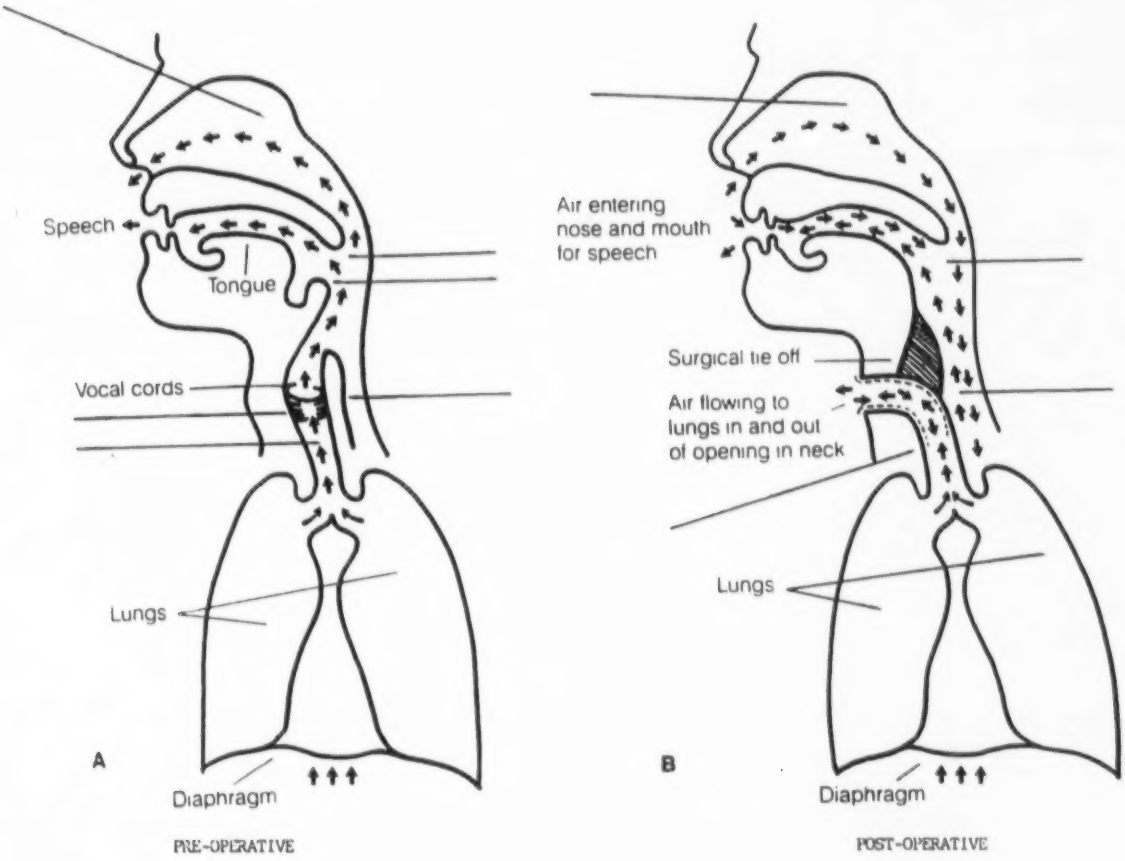
   A. smell and touch

   B. taste and smell

   C. smell and sight

Please Turn To The Next Page.

7. For review, please correctly label the 2 diagrams below, using the spaces provided. (Objectives 2 & 3)



Post-Assessment continued on next page.

Please Turn To The Next Page.

8. Place the letter in column B in the blank next to the item it best matches or explains in column A. (Objective 6).

A.	B.
_____Electrolarynx	A. Works by placing electrodes into the patients neck to produce sound.
_____Esophageal Speech	B. Must learn to trap air in the esophagus to produce a belch-like voice.
	C. A device that acts as an artificial sound source.

Post-Assessment continued on next page.

Please Turn To The Next Page.

POST-ASSESSMENT (CON'T)

In a few sentences answer the next 2 questions.

9. The function of speech changes in what ways following a total laryngectomy. (Objective 4).

10. The function of eating changes in what ways following a total laryngectomy. (Objective 5).

11. For this last question please write a paragraph or two discussing your feelings as to the relevancy of this material to your practice of Nursing. If, at present, you do not take care of Total Laryngectomy patients, but needed to in the future, would this module help or hinder you in your delivery of care to this group of patients? Please explain using the back of this page or an extra page provided at the back of the module.

Check your answers to the post-assessment on the next page.

Please Turn To The Next Page.

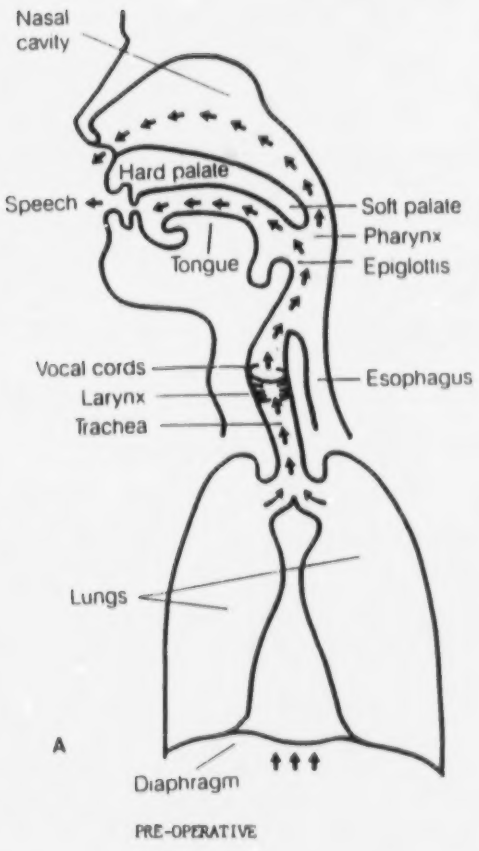
ANSWERS TO POST-ASSESSMENT

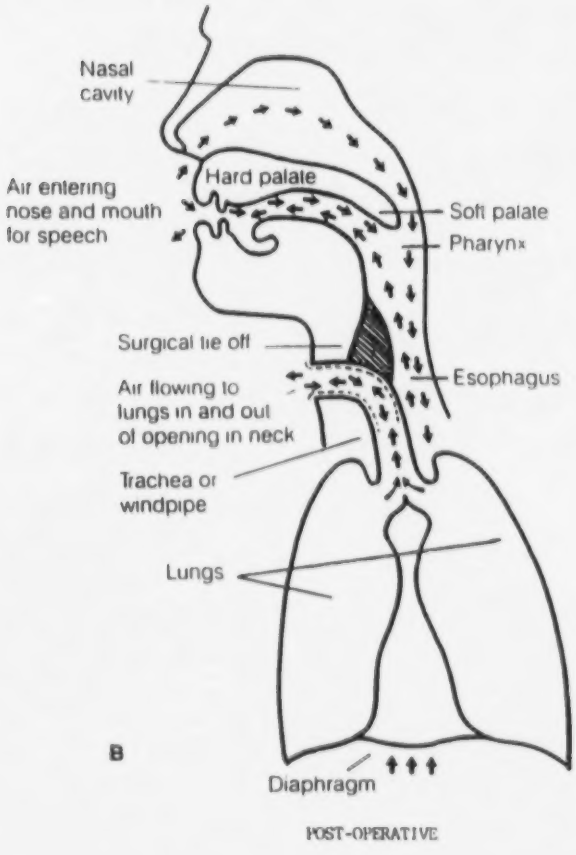
1. The pharynx is divided into C the **laryngopharynx, oropharynx**, and the **nasopharynx.**
2. A flaplike structure that helps prevent aspiration during swallowing is **B** the **epiglottis.**
3. Besides the vocal cords, the larynx is also comprised of **A** the **false cords**, and the **vestibule.**
4. The two structures that are functionally separated following a total laryngectomy are called **A** the **trachea** and the **esophagus.**
5. The muscular structure, in the head and neck region, that is divided into 3 areas is **A** the **pharynx.**
6. The two senses that are lost following a total laryngectomy are **B taste** and **smell.**

Post-Assessment answers
continued on next page.

Please Turn To The Next Page.

7. Review the two diagrams below, and check them with your diagrams.





Post-Assessment answers continued on next page.

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ANSWERS TO POST-ASSESSMENT (CON'T)

8. **Electrolarynx** is C, a device that acts as an artificial sound source.

   In **Esophageal Speech** the patient must learn to trap air in the esophagus to produce a belch-like voice, B.

9. The function of speech changes following a laryngectomy by the mere fact that the patient has lost the ability to speak normally. The patient must first communicate by writing, and then can be taught how to use an electrolarynx, and then hopefully esophageal speech.

10. The function of eating changes following a total laryngectomy, but only temporarily. The patient must first use a nasogastric tube for nourishment and once the patient has healed properly they usually can resume eating normally again. This could take up to several months following the surgery.

11. This question is for you to relate your own feelings about this module. There is no right or wrong answer.

Please Turn To The Next Page.

SUMMARY

CONGRATULATIONS!!! You have now successfully completed this self-instructional, self-contained module. You have now become an independent learner in your approach to some aspects of caring for the laryngectomee.

Hopefully this Module has provided you with some insight into the care of the laryngectomee and with information that you can carry back to your clinical setting.

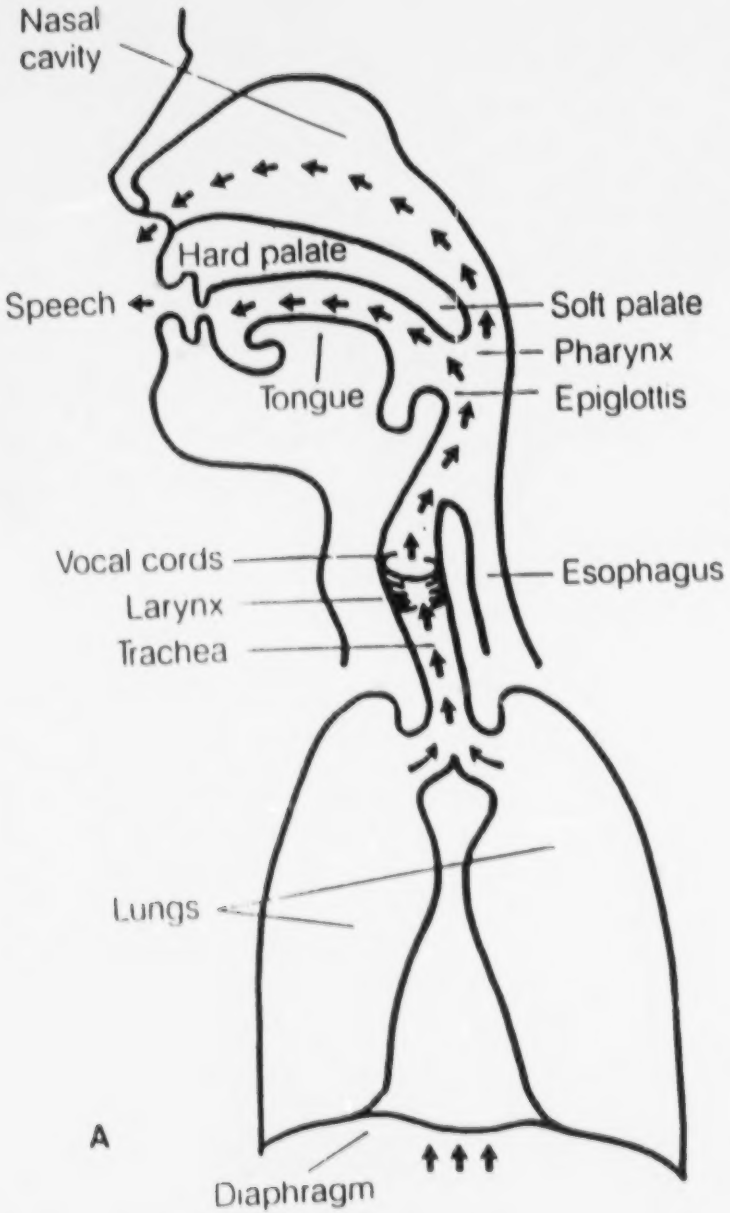
THE END

BIBLIOGRAPHY

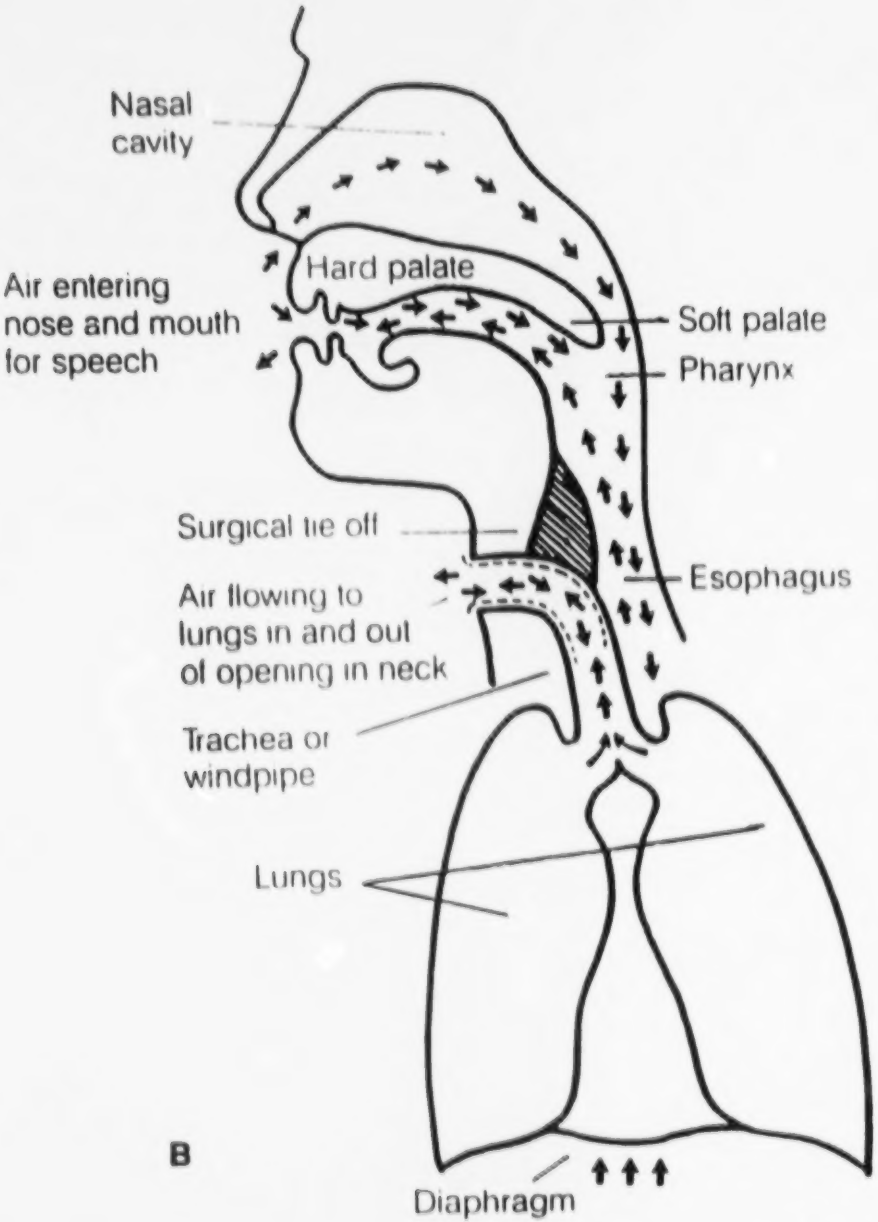
1. Miller, Robert, Groher, Michael E., **Medical Speech Pathology**, Aspen Publishers, Rockville, Maryland, 1990, pp. 54-58.

APPENDIX A

PRE AND POST OPERATIVE LARYNGECTOMY DIAGRAMS



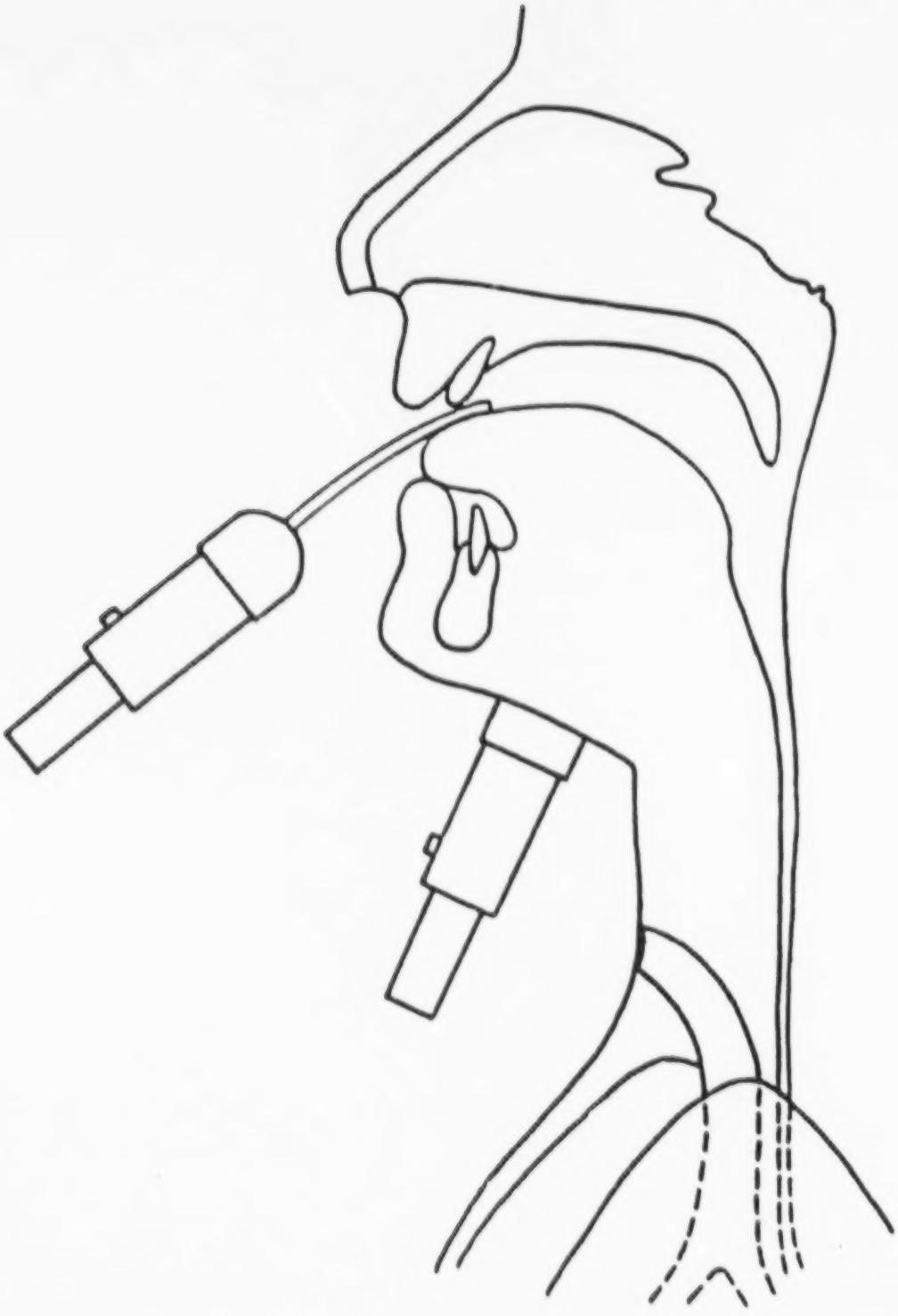
47 PRE-OPERATIVE



POST-OPERATIVE 48

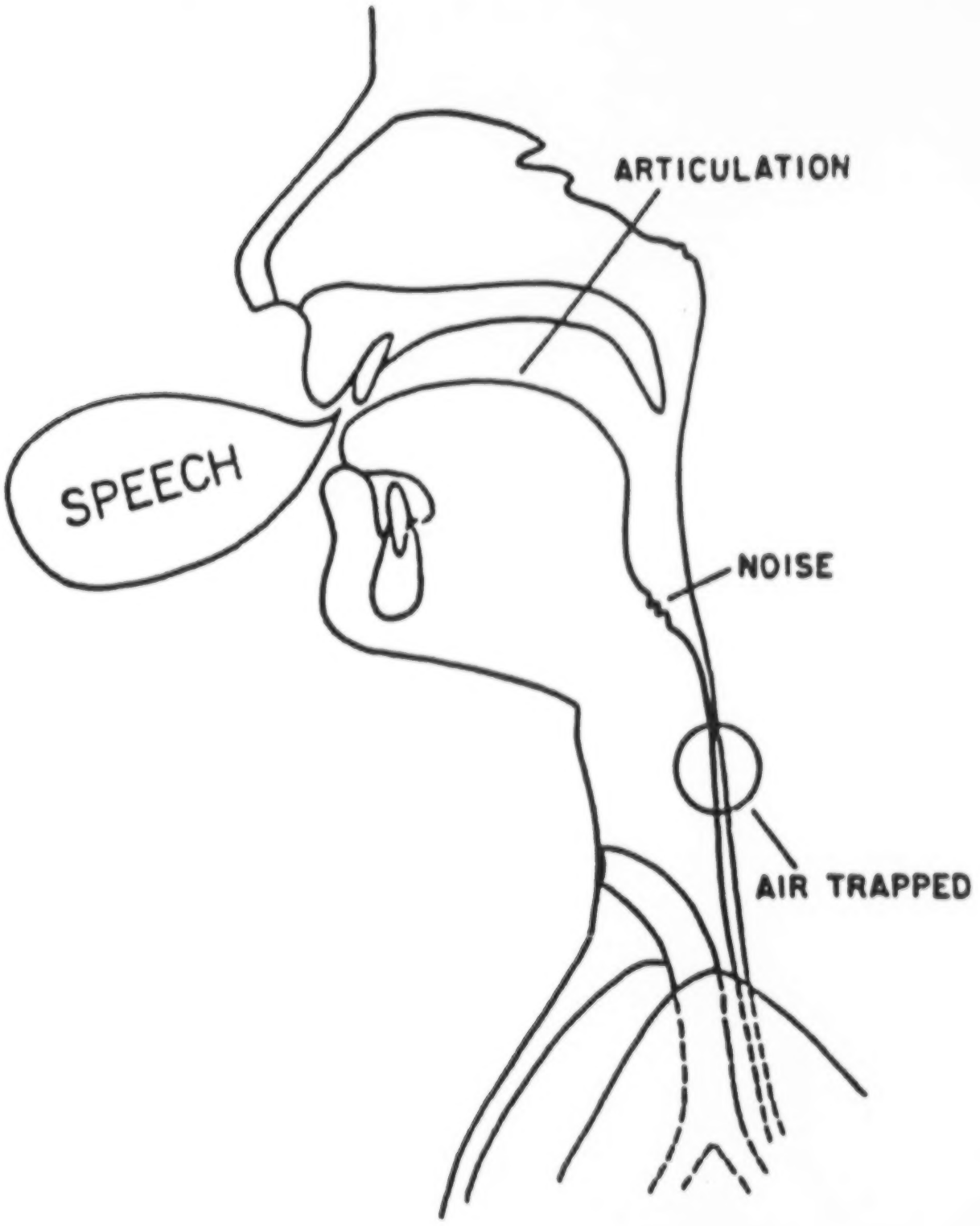
APPENDIX B

PLACEMENT OF ELECTROLARYNX



APPENDIX C

DIAGRAM OF ESOPHAGEAL SPEECH


ARTICULATION
SPEECH
NOISE
AIR TRAPPED

ADDITIONAL ANSWER SHEET